

SET ABB=ON PLU=ON

INDEX 'AGRICOLA, ALUMINIUM, ANABSTR, APOLLIT, AQUALINE, AQUIRE, BABS, BIOCOMMERCE, BIOTECHNO, CABA, CAOLD, CAPLUS, CBNB, CEABA-VTB, CEN, CERAB, CIN, COMPENDEX, CONFSCI, COPPERLIT, CORROSION, DISSABS, FEDRIP, GENBANK, INSPEC, INSPHYS, INVESTEXT, IPA, ... (chemistry cluster)'

ENTERED AT 16:33:53 ON 13 SEP 2004

L1 QUE (GANGWAL, S? OR GANGWAL S?)/AU
L3 QUE (GUPTA, R? OR GUPTA R?)/AU
L4 QUE (TURK, B? OR TURK B?)/AU
L5 QUE L1 AND L3 AND L4
L6 QUE L1 AND ((L3 OR L4))
L7 QUE L3 AND (L1 OR L4)
L8 QUE ((L1 OR L3)) AND L4

FILE 'HCAPLUS, CEABA-VTB, COMPENDEX, NTIS, PASCAL, RAPRA, SCISEARCH'

ENTERED AT 16:39:19 ON 13 SEP 2004

L9 71 S (L5 OR L6 OR L7 OR L8)
L10 59 DUP REM L9 (12 DUPLICATES REMOVED)
L11 34 S L10 AND (ZN OR ZINC)
L12 2 S (ALUMINATE OR AL2O4 OR AL(W)O) AND L11

INDEX 'REGISTRY, LREGISTRY' ENTERED AT 16:51:12 ON 13 SEP 2004

L13 QUE AL.O.ZN/MF AND NC<3
L14 QUE AL2O4.ZN/MF AND 1/NC
L15 QUE AL2O4.OZN/MF AND 1/NC

FILE 'REGISTRY' ENTERED AT 16:52:13 ON 13 SEP 2004

L16 76 S AL.O.ZN/MF AND NC<3
L17 0 S 1314-13-2 AND 37275-76-6
L18 7 S ZINC ALUMINATE AND ZINC OXIDE
L19 90 S AL O ZN/ELF
L20 4 S L18 AND L19

INDEX 'AGRICOLA, ALUMINIUM, ANABSTR, APOLLIT, AQUALINE, AQUIRE, BABS, BIOCOMMERCE, BIOTECHNO, CABA, CAOLD, CAPLUS, CBNB, CEABA-VTB, CEN, CERAB, CIN, COMPENDEX, CONFSCI, COPPERLIT, CORROSION, DISSABS, FEDRIP, GENBANK, INSPEC, INSPHYS, INVESTEXT, IPA, ... (chemistry cluster)'

ENTERED AT 16:56:36 ON 13 SEP 2004

L21 QUE (L16 OR L17 OR L18 OR L19 OR L20)

FILE 'HCAPLUS' ENTERED AT 16:58:09 ON 13 SEP 2004

E PHASE/CT
E CRYSTAL PHASE+ALL/CT
E PHASE+ALL/CT

FILE 'REGISTRY' ENTERED AT 17:00:01 ON 13 SEP 2004

L22 1 S 37275-76-6/RN
L24 1 S 1314-13-2/RN

FILE 'HCAPLUS' ENTERED AT 17:00:01 ON 13 SEP 2004

L23 465 S L22
L25 70478 S L24
L26 472 S (L25 OR ZNO OR (ZN OR ZINC) (A) (O OR OXIDE)) (L) (L23 OR (ZINC OR ZN) (A) (ALUMINATE OR AL2O4 OR AL(W)O))
L27 36 S PHASE(L) L26
E SORBENTS+ALL/CT

E CATALYSTS+NT/CT
L28 542608 S SORBENTS+NT/CT OR CATALYSTS+NT/CT
L29 8 S (L28 OR CATALYST) AND L27
L30 2 S L29 AND P/DT
L31 6 S L29 NOT P/DT
L32 16 S ((L24 OR ZNO/TI OR (ZN/TI OR ZINC/TI) (A) (O/TI OR OXIDE/TI)) (L) (L22
OR (ZINC/TI OR ZN/TI) (A) (ALUMINATE/TI OR AL2O4/TI OR AL/TI (W) O/TI)))
L33 5 S L32 AND PHASE?
L34 5 S L33 NOT L29
L35 0 S L34 AND P/DT

SET ABB=ON PLU=ON

INDEX 'WPIX, JAPIO, JICST-EPLUS, PATOSEP' ENTERED AT 09:21:52 ON 14 SEP 2004
L1 QUE (1314-13-2 OR ZNO OR (ZN OR ZINC) (A) (O OR OXIDE)) (10A) (37275-76-6
OR (ZINC OR ZN) (A) (ALUMINATE OR AL2O4 OR AL(W) O))
L2 QUE SORBENTS+NT/CT OR CATALYSTS+NT/CT OR SORBENT OR CATALYST
L3 QUE PHASE
L4 QUE L1 AND L2 AND L1(10A) L3
L5 QUE L1 AND L2 AND L3
L6 QUE L1 AND L2 AND L3
L7 QUE L1 AND (L2 OR L3)

FILE 'WPIX, JAPIO, JICST-EPLUS, PATOSEP' ENTERED AT 09:28:23 ON 14 SEP 2004
L8 22 S L7
L9 21 DUP REM L8 (1 DUPLICATE REMOVED)

INDEX 'PATDPAFULL, EUROPATFULL, PCTFULL, FRFULL' ENTERED AT 09:34:51 ON 14SEP2004
L10 QUE L4

FILE 'EUROPATFULL' ENTERED AT 09:35:56 ON 14 SEP 2004
L11 1 S L1 AND L2 AND L1(10A) L3
L12 1 S L2 AND L1(10A) L3

INDEX 'PATDPAFULL, EUROPATFULL, PCTFULL, FRFULL' ENTERED AT 09:39:15 ON 14SEP2004
1 FILE EUROPATFULL
L13 QUE L1(10A) L3

☐ L12 ANSWER 1 OF 2 HCAPLUS COPYRIGHT 2004 ACS on STN

Accession Number

2004:722708 HCAPLUS Full Text

Title

Attrition resistant, zinc titanate-containing, reduced sorbents and methods of use thereof

Author/Inventor

Vierheilig, Albert A.; Gupta, Raghubir P. ; Turk, Brian S.

Patent Assignee/Corporate Source

Research Triangel Institute, USA; Intercat, Inc.

Patent Information

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004170549	A1	20040902	2004-790920	20040302

Priority Application Information

US 2000-541204 A3 20000403

CLASS

PATENT NO. CLASS PATENT FAMILY CLASSIFICATION CODES

US 20040170549 ICM B01D053-50

NCL 423244060

Abstract

Reduced sulfur gas species (e.g., H₂S, COS and CS₂) are removed from a gas stream by compns. wherein a **zinc** titanate ingredient is associated with a metal oxide-**aluminate** phase material in the same particle species. Nonlimiting examples of metal oxides comprising the compns. include magnesium oxide, **zinc** oxide, calcium oxide, nickel oxide.

Controlled or Index Terms

INDEXING IN PROGRESS

Flue gases

Fuel gases

Sorbents

Waste gases

(attrition resistant, **zinc** titanate-containing, reduced sorbents and methods of use thereof)

Bentonite

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(attrition resistant, **zinc** titanate-containing, reduced sorbents and methods of use thereof)

12651-25-1, **Zinc** titanate

RL: CPS (Chemical process); FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); FORM (Formation, nonpreparative); PROC (Process); USES (Uses)
(attrition resistant, **zinc** titanate-containing, reduced sorbents and methods of use thereof)

142-72-3, Magnesium acetate 471-34-1, Calcium carbonate 1305-78-8,
Calcium oxide 1313-99-1, Nickel oxide 1314-13-2, **Zinc** oxide

1344-28-1, Alumina 11137-98-7, Magnesium **aluminate**13463-67-7, Titanium oxide 37275-76-6, **Zinc aluminate**

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(attrition resistant, **zinc** titanate-containing, reduced sorbents and methods of use thereof)

75-15-0, Carbon disulfide 463-58-1, Carbonyl sulfide 7783-06-4,

Hydrogen sulfide

RL: PEP (Physical, engineering or chemical process); PYP (Physical process); REM (Removal or disposal); PROC (Process)

(attrition resistant, **zinc** titanate-containing, reduced sorbents and methods of use thereof)

1309-48-4, Magnesium oxide

RL: TEM (Technical or engineered material use); USES (Uses)

(attrition resistant, **zinc** titanate-containing, reduced sorbents and methods of use thereof)

Supplementary Terms

reduced sulfur gas sorbent

International Patent Classification

ICM B01D053-50

☐ L12 ANSWER 2 OF 2 HCAPLUS COPYRIGHT 2004 ACS on STN

Accession Number

2002:220735 HCAPLUS Full Text

Title

Regenerable metal oxide and metal-promoted oxides for removal of organic sulfur compounds in hydrocarbon fuel desulfurization

Author/Inventor

Gupta, Raghubir P. ; Turk, Brian S.

Patent Assignee/Corporate Source

Research Triangle Institute, USA

Patent Information

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
(1) WO 2002022763	A1	20020321	2001-US26019	20010912
AU 2001088327	A5	20020326	2001-88327	20010912
(2) EP 1337606	A1	20030827	2001-968049	20010912

Abstract

Hydrocarbon feedstocks for manufacture of fuels and fuel components, especially gasoline and diesel fuel, are desulfurized by passage through a regenerable sorbent that not only can selectively adsorb sulfur compds. in the feedstock, over an active metal oxide sulfur sorbent, but which also contains a refractory inorg. oxide cracking catalyst support that cracks and decomps. cyclic organic and aromatic sulfur rings. The spent sorbents can be regenerated under high-temperature oxidizing conditions to convert metal sulfides (from adsorption and absorption of sulfur compds. on metal oxides or metal promoters) back to the metal oxides with release of sulfur oxides. Suitable metal oxide sorbents/cracking catalysts include alumina, ZnO, **zinc aluminate**, **zinc titanate**, **zinc aluminate** titanate, iron **aluminate**, ferric oxide, and copper oxide. The method and sorbents are suitable for removal of organic sulfur compds. (e.g., sulfides, disulfides, and aromatic sulfides) in sulfur-containing naphtha and middle distillates.

Controlled or Index Terms

Naphtha

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PUR (Purification or recovery); PREP (Preparation); PROC (Process)

(coker, desulfurization of; regenerable metal oxide and metal-promoted oxides for removal of organic sulfur compds. in hydrocarbon fuel desulfurization)

Naphtha

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PUR (Purification or recovery); PREP (Preparation); PROC

(Process)

(cracked, desulfurization of; regenerable metal oxide and metal-promoted oxides for removal of organic sulfur compds. in hydrocarbon fuel desulfurization)

Petroleum products

(cycle oils; regenerable metal oxide and metal-promoted oxides for removal of organic sulfur compds. in hydrocarbon fuel desulfurization)

Thioethers

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); REM (Removal or disposal); PROC (Process)

(cyclic, removal of; regenerable metal oxide and metal-promoted oxides for removal of organic sulfur compds. in hydrocarbon fuel desulfurization)

Diesel fuel

(desulfurization of components for; regenerable metal oxide and metal-promoted oxides for removal of organic sulfur compds. in hydrocarbon fuel desulfurization)

Gasoline

RL: IMF (Industrial manufacture); PREP (Preparation)

(desulfurization of components for; regenerable metal oxide and metal-promoted oxides for removal of organic sulfur compds. in hydrocarbon fuel desulfurization)

Naphtha

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PUR (Purification or recovery); PREP (Preparation); PROC (Process)

(desulfurization of; regenerable metal oxide and metal-promoted oxides for removal of organic sulfur compds. in hydrocarbon fuel desulfurization)

Petroleum refining

(desulfurization; regenerable metal oxide and metal-promoted oxides for removal of organic sulfur compds. in hydrocarbon fuel desulfurization)

Absorbents

Adsorbents

Sorbents

(metal oxides; regenerable metal oxide and metal-promoted oxides for removal of organic sulfur compds. in hydrocarbon fuel desulfurization)

Petroleum products

(middle distillates; regenerable metal oxide and metal-promoted oxides for removal of organic sulfur compds. in hydrocarbon fuel desulfurization)

Cracking catalysts

(regenerable metal oxide and metal-promoted oxides for removal of organic sulfur compds. in hydrocarbon fuel desulfurization)

Thioethers

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); REM (Removal or disposal); PROC (Process)

(removal of; regenerable metal oxide and metal-promoted oxides for removal of organic sulfur compds. in hydrocarbon fuel desulfurization)

Aromatic compounds

Aromatic hydrocarbons, processes

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); REM (Removal or disposal); PROC (Process)

(sulfur-containing, removal of; regenerable metal oxide and metal-promoted oxides for removal of organic sulfur compds. in hydrocarbon fuel desulfurization)

75-08-1, Ethyl mercaptan 75-15-0, Carbon disulfide, processes 95-15-8, Benzothiophene 107-03-9, Propyl mercaptan 109-79-5, Butyl mercaptan 110-02-1, Thiophene 110-81-6, Diethyl disulfide 132-65-0, Dibenzothiophene 352-93-2, Diethyl sulfide 872-55-9, 2-Ethylthiophene

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); REM (Removal or disposal); PROC (Process)
(removal of; regenerable metal oxide and metal-promoted oxides for removal of organic sulfur compds. in hydrocarbon fuel desulfurization)
1309-37-1, Ferric oxide, uses 1314-13-2, **Zinc** oxide, uses
1317-38-0, Copper oxide (CuO), uses 1344-28-1, Alumina, uses
12651-25-1, **Zinc** titanate 12678-40-9, Aluminum iron oxide
37275-76-6, **Zinc aluminate** 146956-70-9, Aluminum
titanium **zinc** oxide

RL: CAT (Catalyst use); CPS (Chemical process); PEP (Physical, engineering or chemical process); PYP (Physical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(sorbents containing; regenerable metal oxide and metal-promoted oxides for removal of organic sulfur compds. in hydrocarbon fuel desulfurization)

Supplementary Terms

hydrocarbon fuel desulfurization org sulfur gasoline diesel; metal oxide sorbent cracking fuel desulfurization; regenerable metal oxide sorbent cracking catalyst hydrocarbon desulfurization

International Patent Classification

ICM C10G029-16
ICS C10G025-00; C10G025-06; C10G025-12

☐ **L31 ANSWER 1 OF 6 HCAPLUS COPYRIGHT 2004 ACS on STN**

Accession Number

2002:644440 HCAPLUS Full Text

Title

The characterization of Zn-based desulfurization sorbents on various supports

Author/Inventor

Kang, Seok Chan; Jun, Hee Kwon; Lee, Tae Jin; Ryu, Si Ok; Kim, Jae Chang

Source

Hwahak Konghak (2002), 40(3), 289-297 CODEN: HHKHAT; ISSN: 0304-128X

Abstract

Zinc-based desulfurization sorbents supported on TiO₂, SiO₂ and Al₂O₃ and modified by treatment at various temps. were prepared. Their sulfur removing capacities in a fixed-bed reactor and characteristics of their phys. and chemical properties were tested during multiple cycles of sulfidation/regeneration. The best sorbent with high sulfur removing capacity and resistance to the deactivation at high and middle temperature was the alumina supported sorbent pretreated at 800°C. The active species was the **zinc oxide phase** coated on the external surface of the alumina support without forming the spinel structure of **zinc -aluminate** and the change in the phys. properties was not found during repeated sulfidation and regeneration.

Controlled or Index Terms

Flue gas desulfurization

Sorbents

(characterization of Zn-based desulfurization sorbents on various supports)

☐ **L31 ANSWER 2 OF 6 HCAPLUS COPYRIGHT 2004 ACS on STN**

Accession Number

2001:530440 HCAPLUS Full Text

Title

Kinetics of the Autoxidation of Sodium Dodecyl Sulfate Catalyzed by Alumina-Supported Co-Zn Composite

Author/Inventor

Usman, K.; Adesina, A. A.; Lucien, F. P.; Waite, T. D.

Source

Industrial & Engineering Chemistry Research (2001), 40(23), 5095-5101 CODEN: IECRED; ISSN: 0888-5885

Abstract

SDS, an important anionic surfactant used in a variety of textile and biotechnol. operations, frequently ends up in stationary water bodies where it promotes the formation of blue-green algae, an environmentally offensive species. The catalytic wet oxidation of SDS was studied over alumina-supported Co-Zn **oxide catalysts** under relatively mild conditions of pressure (<1.3 MPa) and temperature (403-448 K). Five **catalyst** compns. examined showed a decreasing total (BET) surface area with increasing **ZnO** loading suggesting possible loss of surface area as a result of the formation of a **Zn aluminate phase** during calcination at 923 K. Catalytic activity also decreased with addition of **ZnO**; however, a 15Co/5Zn/80alumina **catalyst** exhibited the most superior performance. Total degradation of the organic substrate could be achieved in .apprx.5 h. The kinetics of SDS autoxidn. on this **catalyst** revealed a 1st-order dependency on both the dodecylsulfate concentration and the O partial pressure. The observed increase in acidity of the reaction medium with SDS conversion paralleled the production of SO₄²⁻ or (HSO₄⁻) species. The rate of sulfate production followed the same kinetics with SDS degradation

albeit with different ests. of the pseudo-1st-order rate consts. Independent measurement of the total organic C (TOC) oxidation rate showed a linear correlation with SDS concentration, but attained a plateau at high O partial pressure (>900 KPa). A temperature-dependent expression for the degree (extent) of mineralization in terms of the activation energy for SDS degradation and TOC oxidation was derived for temps. 403-473 K. A mechanism is proposed to explain the oxidative degradation of SDS.

Controlled or Index Terms

Activation energy

Oxidation catalysts

(kinetics of autoxidn. of sodium dodecylsulfate catalyzed by alumina-supported cobalt-zinc composite)

☐ **L31 ANSWER 3 OF 6 HCAPLUS COPYRIGHT 2004 ACS on STN****Accession Number**2000:284132 HCAPLUS Full Text**Title**

Microcalorimetric and infrared spectroscopic studies of γ -Al₂O₃ modified by zinc oxide

Author/Inventor

Zou, H.; Shen, J.

Source

Thermochimica Acta (2000), 351(1,2), 165-170 CODEN: THACAS; ISSN: 0040-6031

Abstract

The number and strength of surface acid and base sites on the ZnO/ γ -Al₂O₃ **catalysts** were quant. measured by the technique of microcalorimetric adsorption (MA) while the nature of the acid and base sites were identified by Fourier transform IR spectroscopy (FTIR), by using ammonia and carbon dioxide as the probe mols. Specifically, the effects of ZnO loading and calcination temperature on the structure and surface acid/base properties were studied. It was found that the acidity was not significantly affected by the ZnO loading for the ZnO/ γ -Al₂O₃ samples calcined at 673 K. However, the basicity as measured by the coverage of CO₂ increased substantially with increasing ZnO loading although the initial heats were almost not changed. X-ray diffraction (XRD) showed that the 10% ZnO/ γ -Al₂O₃ sample calcined at 673 K exhibited only the phase of γ -Al₂O₃, indicating the effective dispersion of ZnO on the surface. ZnO/ γ -Al₂O₃ samples with higher loadings showed the phase of ZnO when they were calcined at 673 and 873 K, resp. The spinel structure ZnAl₂O₄ was formed when the 42% ZnO/ γ -Al₂O₃ sample was calcined at 1073 K. Accordingly, the surface acidity and basicity were significantly changed. The surface of the 42% ZnO/ γ -Al₂O₃ sample calcined at 673 K was mainly covered by Zn²⁺ cations, as evidenced by the FTIR results which showed that this sample exhibited mainly Lewis acid sites associated with Zn²⁺ and Lewis base sites associated with O²⁻ anions adjacent to Zn²⁺ cations. When the spinel structure ZnAl₂O₄ was formed upon the calcination at 1073 K, the surface was mainly covered by Al³⁺ again, exhibiting acidity and basicity with both Lewis and Bronsted features associated with Al³⁺ cations. In addition, the number and strength of both acid and base sites on the surface of the spinel were significantly decreased.

Controlled or Index Terms

Acidity

Basicity

Calcination

(microcalorimetric and IR spectroscopic studies of the number, nature and strength of surface acid and base sites of γ -Al₂O₃)

catalysts modified by zinc oxide)

Bronsted acids

Lewis acids

Lewis bases

RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(sites; microcalorimetric and IR spectroscopic studies of the number,
nature and strength of surface acid and base sites of γ -Al₂O₃

catalysts modified by zinc oxide)

Catalysts

(γ -Al₂O₃-ZnO; microcalorimetric and IR spectroscopic studies of
the number, nature and strength of surface acid and base sites of

γ -Al₂O₃ **catalysts** modified by zinc oxide)

1314-13-2, Zinc oxide (ZnO), processes

RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process);

PRP (Properties); PROC (Process); USES (Uses)

(composite **catalysts** ; microcalorimetric and IR spectroscopic
studies of the number, nature and strength of surface acid and base sites
of γ -Al₂O₃ **catalysts** modified by zinc oxide)

23713-49-7, Zinc, ion (Zn²⁺), uses

RL: MOA (Modifier or additive use); USES (Uses)

(microcalorimetric and IR spectroscopic studies of the number, nature and
strength of surface acid and base sites of γ -Al₂O₃

catalysts modified by zinc oxide)

12068-53-0, Zinc aluminate ZnAl₂O₄

RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)

(secondary **phase** ; microcalorimetric and IR spectroscopic

studies of the number, nature and strength of surface acid and base sites
of γ -Al₂O₃ **catalysts** modified by zinc

oxide)

1344-28-1, Aluminum oxide (Al₂O₃), processes

RL: CAT (Catalyst use); PEP (Physical, engineering or chemical process);

PRP (Properties); PROC (Process); USES (Uses)

(γ -, composite **catalysts** ; microcalorimetric and IR
spectroscopic studies of the number, nature and strength of surface acid
and base sites of γ -Al₂O₃ **catalysts** modified by zinc
oxide)

Supplementary Terms

gamma alumina **catalyst** acidity basicity zinc oxide modifier

☐ L31 ANSWER 4 OF 6 HCAPLUS COPYRIGHT 2004 ACS on STN

Accession Number

1994:308360 HCAPLUS Full Text

Title

*LRS (Laser Raman Spectroscopy) studies on the effect of preparation variables on
structure of MoO₃/ γ -Al₂O₃ and promotion of ZnO*

Author/Inventor

Zhao, Biying; Xu, Xianping; Lu, Lin; Tang, Youqi

Source

Shiyong Huagong (1993), 22(4), 216-21 CODEN: SHHUE8; ISSN: 1000-8144

Abstract

When MoO₃ loading is below the monolayer capacity, there are two intense peaks
in the Raman spectrum of MoO₃/ γ -Al₂O₃: a broad band at 950 cm⁻¹ and a sharp peak
at 876 cm⁻¹. The first is assigned to two-dimensional polymolybdate (the
majority of Mo in it is octahedrally coordinated), which is the precursor of the

HDS (hydrodesulfurization) active **phase**. The second is associated with tetrahedrally coordinated monomeric molybdenum species which are inactive in the HDS reaction. The effect of pH value of impregnation solution, calcination time, calcination temperature and the total content of MoO₃ etc. on the relative content of two kinds of Mo has been studied systematically with both qual. and quant. methods. The ways to decrease the tetrahedrally coordinated Mo species in the process of preparation have been explored. Adding ZnO to change γ -Al₂O₃ into Zn-deficiency **zinc aluminate** can restrict the formation of this inactive Mo- **phase** to some extent, and as a result, the activity of the **catalyst** can be improved.

Controlled or Index Terms

Surface structure

(of zinc-oxide-promoted molybdenum trioxide-alumina hydrodesulfurization **catalysts**, laser Raman spectroscopy study of preparation variable effect on)

Raman spectra

(of zinc-oxide-promoted molybdenum trioxide-alumina hydrodesulfurization **catalysts**, preparation variable effect on structure in relation to)

Petroleum refining catalysts

(hydrodesulfurization, zinc-oxide-promoted molybdenum trioxide-alumina, laser Raman spectroscopy study of preparation variable effect on structure of)

Desulfurization catalysts

(reductive, zinc-oxide-promoted molybdenum trioxide-alumina, laser Raman spectroscopy study of preparation variable effect on structure of) 1313-27-5, Molybdenum trioxide, uses

RL: USES (Uses)

(hydrodesulfurization **catalysts** from alumina and, zinc-oxide-promoted, laser Raman spectroscopy study of preparation variable effect on structure of)

1344-28-1, Alumina, uses

RL: USES (Uses)

(hydrodesulfurization **catalysts** from molybdenum trioxide and, zinc-oxide-promoted, laser Raman spectroscopy study of preparation variable effect on structure of)

1314-13-2, Zinc oxide, uses

RL: USES (Uses)

(promoter, in molybdenum trioxide-alumina hydrodesulfurization **catalysts**, laser Raman spectroscopy study of preparation variable effect on structure of)

Supplementary Terms

molybdena zinc oxide alumina hydrodesulfurization **catalyst**; petroleum refining **catalyst** molybdena alumina; surface structure molybdena alumina hydrodesulfurization **catalyst**; Raman spectra molybdena alumina hydrodesulfurization **catalyst**

☐ L31 ANSWER 5 OF 6 HCAPLUS COPYRIGHT 2004 ACS on STN

Accession Number

1994:306256 HCAPLUS Full Text

Title

Thermal stability of cordierite catalyst supports contaminated by Fe₂O₃, ZnO and V₂O₅

Author/Inventor

Scardi, Paolo; Sartori, Natale; Giachello, Angelo; Demaestri, Pier Paolo;

Branda, Francesco

Source

Journal of the European Ceramic Society (1994), 13(3), 275-82 CODEN: JECSEJ;
ISSN: 0955-2219

Abstract

The effect of pollution of diesel particulate filters on their thermal and chemical stability has been studied. Com. cordierite supports were contaminated, sep., by Fe₂O₃, **ZnO**, and V₂O₅, and their evolution after thermal treatment in the range 800° to 1200° was followed by XRD and SEM. The presence of Fe₂O₃ had little effect, whereas V₂O₅ reacted completely even at the lowest studied temperature, giving crystalline silica and aluminum and magnesium vanadates; the formation of zinc silicate, **zinc aluminate** with spinel structure, and a glassy **phase** was observed at > 1000° in **ZnO**-contaminated samples. The differences in reactivity and nature of the reaction products were explained taking into account the low m.p. of V₂O₅ and its acidic character. The microstructural changes were correlated with the mech. properties of the supports.

Controlled or Index Terms

Catalysts and Catalysis

(**supports**, cordierite, for diesel exhaust filters, thermal stability of, contamination by iron and zinc and vanadium oxides in relation to)

1302-88-1, Cordierite

RL: USES (Uses)

(**catalyst** supports for diesel particulate filters, thermal stability of, contamination by iron and zinc and vanadium oxides in relation to)

1309-37-1, Iron trioxide, miscellaneous 1314-13-2, Zinc oxide, miscellaneous 1314-62-1, Vanadium pentoxide, miscellaneous

RL: POL (Pollutant); OCCU (Occurrence)

(in diesel exhaust particulates, cordierite **catalyst** support contaminated by, thermal stability of)

Supplementary Terms

thermal stability cordierite filter diesel particulate; cordierite **catalyst** thermal stability iron oxide; diesel exhaust cordierite filter thermal stability; filter cordierite thermal stability zinc oxide; exhaust vanadium pentoxide cordierite filter stability

☐ L31 ANSWER 6 OF 6 HCAPLUS COPYRIGHT 2004 ACS on STN

Accession Number

1953:75305 HCAPLUS Full Text

Title

Reaction of zinc and zinc oxide with firebricks

Author/Inventor

Richardson, H. M.; Rigby, G. R.

Source

Transactions of the British Ceramic Society (1953), 52, 405-16 CODEN: TBCSAA;
ISSN: 0371-5469

Abstract

Zn or **ZnO**, if deposited in the pores and joints of the brickwork of blast-furnace stacks, do not cause serious disintegration. **ZnO** reacts in the laboratory with the mullite present in firebricks to give Zn silicate and **Zn aluminate**, the reaction commencing at 800°. Zn silicate can occur together with mullite at temps. below 1000°, but this is an unstable condition and when equilibrium is attained these 2 **phases** are incompatible. **ZnO** may influence

the disintegration of firebricks by CO, since fayalite, which is initially immune to C deposition, decompose when heated with **ZnO** at 800° to give Zn silicate and Fe oxide, the decomposition mixture then being an active **catalyst** for the dissociation of CO. The importance of this observation is readily apparent when it is remembered that Fe spots in firebricks immune to CO disintegration may initially have the Fe combined as silicate or aluminate.

☐ L34 ANSWER 1 OF 5 HCAPLUS COPYRIGHT 2004 ACS on STN

Accession Number

2003:1013984 HCAPLUS Full Text

Title

Synthesis of zinc aluminate spinel film through the solid-phase reaction between zinc oxide film and α -alumina substrate

Author/Inventor

Bi, Zhaoxia; Zhang, Rong; Wang, Xusheng; Gu, Shulin; Shen, Bo; Shi, Yi; Liu, Zhiguo; Zheng, Youdou

Source

Journal of the American Ceramic Society (2003), 86(12), 2059-2062 CODEN: JACTAW; ISSN: 0002-7820

Abstract

We synthesized spinel ZnAl_2O_4 film on α - Al_2O_3 substrate using a solid-phase reaction between the pulsed-laser-deposited ZnO film and α - Al_2O_3 substrate. Auger electron spectroscopy showed that the atomic distribution in the spinel ZnAl_2O_4 was inhomogeneous, which indicated that the reaction was diffusion controlled. Based on X-ray fluorescence measurements, the apparent growth activation energy of ZnAl_2O_4 was determined as 504 kJ/mol. X-ray diffractometry spectra showed that, as the growth temperature increased, the ZnAl_2O_4 film became disoriented from the single (111) orientation. The ZnAl_2O_4 (333) diffraction peak shifted toward a small angle, and its full-width at half-maximum decreased from 1.30° to 0.37° . At the growth temperature of 1100°C , the morphol. of the ZnAl_2O_4 was initially transformed from islands to stick structures, then to bulgy-line structures with increased growth time. X-ray diffractometry spectra showed that these transformations were correlated with changes of ZnAl_2O_4 orientation.

Controlled or Index Terms

Activation energy

(ZnAl_2O_4 growth; synthesis of zinc aluminate spinel film through the solid-phase reaction between zinc oxide film and α -alumina substrate)

1314-13-2, Zinc oxide (ZnO), processes

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)

(precursor film; synthesis of zinc aluminate spinel film through the solid-phase reaction between zinc oxide film and α -alumina substrate)

12068-53-0P, Aluminum zinc oxide (Al_2ZnO_4)

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(spinel-type, films; synthesis of zinc aluminate spinel film through the solid-phase reaction between zinc oxide film and α -alumina substrate)

1344-28-1, Aluminum oxide (Al_2O_3), processes

RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(substrate and aluminum source α -; synthesis of zinc aluminate spinel film through the solid-phase reaction between zinc oxide film and α -alumina substrate)

1302-74-5, Corundum (Al_2O_3), processes

RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(substrate and aluminum source; synthesis of zinc aluminate spinel film

through the solid-**phase** reaction between zinc oxide film and α -alumina substrate)

☐ **L34 ANSWER 2 OF 5 HCAPLUS COPYRIGHT 2004 ACS on STN**

Accession Number

2003:132139 HCAPLUS Full Text

Title

Preparation and properties of zinc oxide nanoparticles coated with zinc aluminate

Author/Inventor

Yuan, Fangli; Hu, Peng; Yin, Chunlei; Huang, Shulan; Li, Jinlin

Source

Journal of Materials Chemistry (2003), 13(3), 634-637 CODEN: JMACEP; ISSN: 0959-9428

Abstract

Zinc oxide nanoparticles coated with zinc aluminate have been prepared by performing Al_2O_3 precipitation on the precursor basic carbonate of zinc (BCZ) of zinc oxide. TEM shows that a homogeneous layer is formed on the surface of the zinc oxide nanoparticles, and the coated particle size is 50-60 nm. The thickness of the layer estimated by high magnification TEM is 4-5 nm. Results of XPS show that the elements in the coating at the surface of the ZnO nanoparticles are Zn, O and Al. X-Ray diffraction and lattice fringe data show that the coating is of the ZnAl_2O_4 **phase** formed by the reaction of basic carbonate of zinc and basic carbonate of aluminum. The zinc aluminate coating is effective in reducing the catalytic activity of zinc oxide nanoparticles. Zinc oxide nanoparticles coated with zinc aluminate not only retain a high UV absorptivity, but also increase their reflectance of visible light.

☐ **L34 ANSWER 3 OF 5 HCAPLUS COPYRIGHT 2004 ACS on STN**

Accession Number

1983:208987 HCAPLUS Full Text

Title

Effect of lithium fluoride on the formation of zinc aluminate. Observation of the behavior of LiF in the microstructural changes of zinc oxide -aluminum oxide-lithium fluoride system

Author/Inventor

Hashiba, Minoru; Miura, Eiji; Nurishi, Yukio; Hibino, Taizo

Source

Nippon Kagaku Kaishi (1983), (4), 501-6 CODEN: NKAKB8; ISSN: 0369-4577

Abstract

The formation fraction of ZnAl_2O_4 was measured by chemical anal., and microstructural observations were carried out by SEM and energy-dispersive x-ray spectrometry for the specimens heated at 700, 800 and 900° for various duration. The increase in the fraction of ZnAl_2O_4 was apparently interrupted in the presence of LiF after abrupt increase in the initial stage of reaction at each temperature. ZnAl_2O_4 was formed via 4 steps in the microstructure as follows: (1) initiation of the action of LiF on the surface of Al_2O_3 particle; (2) formation of ZnAl_2O_4 layer around Al_2O_3 particle and intermediate **phase** containing LiF, Zn, and Al between ZnAl_2O_4 and Al_2O_3 **phases**; (3) formation of ζ -Li aluminate layer between ZnAl_2O_4 and intermediate **phases**; (4) existence of intermediate **phase** at the center of Al_2O_3 particle. ZnAl_2O_4 formation was accelerated by the rapid migration from Al_2O_3 to ZnO **phases** through the intermediate **phase** in the 1st 2 steps and interrupted apparently by the slow diffusion of Al^{3+} and Zn^{2+} ions through the ZnAl_2O_4 layer and ζ -Li aluminate

phase formed inside of ZnAl₂O₄ layer in steps 3 and 4. The elevation of heating temperature and increase in the amount of LiF increase the quantity of intermediate **phase** and promote the ZnAl₂O₄ formation in the initial stage of the reactions.

☐ L34 ANSWER 4 OF 5 HCAPLUS COPYRIGHT 2004 ACS on STN

Accession Number

1966:24922 HCAPLUS [Full Text](#)

Title

Reduction of zinc aluminate and the formation of new metastable phases in the Al₂O₃-ZnO system

Author/Inventor

Thery, Jeanine; Colin, Francois

Source

Compt. Rend. (1965), 261(19(Groupe 8)), 3826-8

Abstract

Two new metastable **phases** which are decomposed between 900 and 1200° were formed by reduction of Zn aluminate. These have compns. of about 16Al₂O₃.ZnO and 99 mole % Al₂O₃, resp. Debye-Scherrer diagrams are given for both **phases**.

Controlled or Index Terms

X-rays

(diffraction of, by Al₂O₃-ZnO system metastable **phases**)

1314-13-2, Zinc oxide

(system, Al₂O₃-, metastable **phases** in)

1344-28-1, Aluminum oxide

(system, ZnO-, metastable **phases** in)

☐ L34 ANSWER 5 OF 5 HCAPLUS COPYRIGHT 2004 ACS on STN

Accession Number

1966:16597 HCAPLUS [Full Text](#)

Title

Nonstoichiometric character of zinc aluminate and formation of metastable phases in the Al₂O₃-ZnO system

Author/Inventor

Colin, Francois; Thery, Jeanine

Source

Compt. Rend. (1965), 261(16(Groupe 8)), 3141-3

Abstract

ZnAl₂O₄ was prepared by solid state reaction at 1000° between α-Al₂O₃ and ZnO. The product had a normal spinel structure: a 8.088 Å. At >1200°, a partial sublimation of the ZnO was shown by a weight loss of the sample. Simultaneously, in the Debye-Scherrer diagrams of the aluminate the displacement of the lines indicated a displacement of the crystalline parameter. The relative intensities of various interferences indicated the elimination of Zn from tetrahedral sites. Above 1600°, Zn was not eliminated homogeneously and α-Al₂O₃ appeared very quickly. Nonstoichiometric spinel **phases** de-decomposed between 850 and 1200° with the formation of 3 metastable **phases** before the final transition to α-Al₂O₃.

☐ L9 ANSWER 1 OF 21 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN DUPLICATE 1

Accession Number

1998-172803 [16] WPIX Full Text

Title

Zeolite catalyst for aromatic hydrocarbon synthesis - has medium size micropores comprising zinc oxide and zinc aluminate.

Patent Assignee/Corporate Source

(SANY-N) SANYO SEKIYU KAGAKU KK

Patent Information

PATENT NO.	KIND	DATE	WEEK	LA	PG	MAIN IPC
JP 10033987	A	19980210	(199816)*		14	B01J029-40

International Patent Classification

ICM B01J029-40

ICS B01J029-06; B01J037-08; C10G035-095

C07B061-00

Abstract

JP 10033987 A UPAB: 19980421

A new zeolite **catalyst** having medium size micropores, which is used to convert hydrocarbons containing paraffin, olefin, and/or naphthene into aromatic hydrocarbons, contains 1.2-20 weight% of **zinc oxide** and 8.2-50 weight% of **zinc aluminate** before it is used. The production of the new **catalyst** is also claimed, where alumina sol, a compound containing zinc cations, and source zeolite having medium size micropores are mixed; after the mixture is dried, it is fired at 300-800 deg. C. In another production claimed, alumina sol and the compound containing zinc cations are mixed. The mixture is fired at 300- 800 deg. C after it is dried and treated with steam, mixed with the source zeolite and finally fired at 300-800 deg. C and dried.

Preferably the zeolite has a zeolite structure having a Si/Al atomic ratio of at least 12 or the zeolite is ZSM-5 zeolite. The catalytic activity of the zeolite is at least 0.2 per sec of the primary reaction rate constant as measured by n-hexane decomposition in the air at 500 deg. C. After the mixture containing the source zeolite is dried and fired, it is treated with steam.

USE - For converting hydrocarbon containing paraffin, olefin, and/or naphthene into aromatic hydrocarbons.

ADVANTAGE - Loss of **zinc oxide** is reduced by adding **zinc aluminate** in the **catalyst**. The **catalyst** provide a higher percent of conversion and a higher selectivity for aromatic hydrocarbons. Dwg.0/1

Manual Codes

CPI: E10-J02B3; E31-P02A; H04-E01; H04-E04; H04-F02E; J04-E04; N03-F; N06-B01

☐ L9 ANSWER 2 OF 21 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN

Accession Number

2004-468191 [44] WPIX Full Text

Title

Manufacture of sorbent composition involves contacting expanded, crushed perlite with acid to provide acid-treated perlite, and combining acid-treated perlite with zinc source, aluminum source and promoter metal to provide unreduced sorbent.

Author/Inventor

DODWELL, G W; GISLASON, J J; JOHNSON, M M; JUST, D K; MORTON, R W

Patent Assignee/Corporate Source

(DODW-I) DODWELL G W; (GISL-I) GISLASON J J; (JOHN-I) JOHNSON M M; (JUST-I) JUST D K; (MORT-I) MORTON R W

Patent Information

PATENT NO.	KIND	DATE	WEEK	LA	PG	MAIN IPC
US 2004121906	A1	20040624	(200444)*		20	B01J020-14

Priority Application Information

US 2002-329236	20021223
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International Patent Classification

ICM B01J020-14

Abstract

US2004121906 A UPAB: 20040712

NOVELTY - A **sorbent** composition is made by contacting expanded, crushed perlite with an acid to provide an acid-treated perlite; and combining the acid-treated perlite with a zinc source, an aluminum source and a promoter metal to provide an unreduced **sorbent**.

USE - For manufacturing a **sorbent** composition (claimed) for removing sulfur (e.g. as hydrogen sulfide, carbonyl sulfide, carbon disulfide, mercaptans, organic sulfides, organic disulfides, thiophene, substitute thiophenes, organic trisulfides, organic tetrasulfides, benzothiophene, alkyl thiophenes, alkyl benzothiophenes, and alkyl dibenzothiophenes) from a sulfur-containing fluid, e.g. cracked gasoline and diesel fuels.

ADVANTAGE - The produced **sorbent** composition has enhanced attrition resistance.

Dwg. 0/2

Manual Codes

CPI: E06-B01; E06-B02; E07-B01; E10-A04A; E10-E03L; E10-H01B; E11-Q02; E31-F01B; E31-M; E31-N05D; E31-P02C; E31-P06E; H04-A01; J01-D01; J01-E03C; L02-G01

☐ L9 ANSWER 3 OF 21 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN

Accession Number

2002-500336 [53] WPIX Full Text

Title

Production of single-crystal Group III metal nitride columns useful as starting material for growing low-defect density bulk materials involves adjusting III/V ratio of Group III metal source vapor to nitrogen.

Author/Inventor

CARLSON, E P; CUOMO, J J; HANSER, A D; THOMAS, D T; WILLIAMS, N M

Patent Assignee/Corporate Source

(KYMA-N) KYMA TECHNOLOGIES INC; (CARL-I) CARLSON E P; (CUOM-I) CUOMO J J; (HANS-I) HANSER A D; (THOM-I) THOMAS D T; (WILL-I) WILLIAMS N M; (UYNC-N) UNIV NORTH CAROLINA STATE

Patent Information

PATENT NO.	KIND	DATE	WEEK	LA	PG	MAIN IPC
(1) WO 2002044444	A1	20020606	(200253)*	EN	83	C30B023-08
US 2002086534	A1	20020704	(200255)			H01L021-461
AU 2002019978	A	20020611	(200264)			C30B023-08
US 6784085	B2	20040831	(200457)			H01L021-28

International Patent Classification

ICM C30B023-08; H01L021-28; H01L021-461

ICS C03B025-06; C30B029-38; H01L021-3205

Abstract

WO 200244444 A UPAB: 20040907

NOVELTY - Single-crystal Group III metal nitride columns are produced by sputtering Group III metal target to produce Group III metal source vapor for

reaction with nitrogen from nitrogen-containing gas, adjusting III/V ratio to create Group III metal-rich environment conducive to preferential column growth, and depositing reactant species on growth surface of template material.

DETAILED DESCRIPTION - Production of single-crystal Group III metal nitride columns (14) includes providing a template material (12) having an epitaxial-initiating growth surface (12A). Group III metal target is sputtered in a reaction chamber using a sputtering apparatus having non-thermionic electron/plasma injector assembly to produce Group III metal source vapor. Nitrogen-containing gas is introduced into the reaction chamber. The III/V ratio of Group III metal source vapor to nitrogen is adjusted to create a Group III metal-rich environment within the chamber conducive to preferential column growth. The Group III metal source vapor is reacted with nitrogen-containing gas to produce a reactant vapor species containing Group III metal and nitrogen. The reactant species is deposited on the growth surface to produce single-crystal IIIIN columns on it.

USE - For producing single-crystal Group III metal nitride columns useful as starting structure or strain-relieving platform for the growth of continuous, low-defect density bulk materials.

ADVANTAGE - The method provides device-quality nitride material without the need for masking and etching procedures. The thermal mismatch stress between the bulk crystal and the substrate is mitigated by the intervening presence of the column structure.

DESCRIPTION OF DRAWING(S) - The figure is a side elevational view of a heterostructure including inventive single-crystal columns.

Template material 12

Growth surface 12A

Group III metal nitride columns 14 Dwg.1/23

Manual Codes

CPI: L04-A02; L04-C01B EPI: U11-C01A3; U11-C01J3A

☐ L9 ANSWER 4 OF 21 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN

Accession Number

2002-315686 [35] WPIX Full Text

Title

Removal of sulfur compounds from normally liquid hydrocarbon fuel or fuel component feedstock involves contacting feedstock in absence of hydrodesulfurization catalyst with regenerable sorbent material.

Author/Inventor

GUPTA, R P; TURK, B S

Patent Assignee/Corporate Source

(RETR-N) RES TRIANGLE INST

Patent Information

PATENT NO.	KIND	DATE	WEEK	LA	PG	MAIN IPC
(1) WO 2002022763	A1	20020321	(200235)*	EN	54	C10G029-16
AU 2001088327	A	20020326	(200251)			C10G029-16
(2) EP 1337606	A1	20030827	(200357)	EN		C10G029-16

International Patent Classification

ICM C10G029-16

ICS C10G025-00; C10G025-06; C10G025-12

Abstract

WO 200222763 A UPAB: 20020603

NOVELTY - Sulfur compounds are removed from a normally liquid hydrocarbon fuel or fuel component feedstock (30) with a sulfur content of at least 150 ppmw by contacting the feedstock in the absence of a hydrodesulfurization **catalyst** with

a regenerable **sorbent** material comprising at least one active metal oxide **sorbent** and a refractory inorganic oxide cracking **catalyst**.

DETAILED DESCRIPTION - Removal of sulfur compounds from a normally hydrocarbon fuel or fuel component feedstock with a sulfur content of at least 150 ppmw involves contacting the feedstock in the absence of a hydrodesulfurization **catalyst** with a regenerable **sorbent** material comprising at least one active metal oxide **sorbent** capable of selectively removing sulfur compounds present in the hydrocarbon feedstock and a refractory inorganic oxide cracking **catalyst** capable of cracking cyclic organic sulfur compounds; and recovering a hydrocarbon product having a sulfur content of 50% or less than the sulfur content of the feedstock.

USE - The process is used for removing sulfur compounds including cyclic and polycyclic organic sulfur components, e.g. organic sulfides, disulfides, mercaptans, thiophenes, and benzothiophenes, from a normally liquid hydrocarbon fuel, e.g. gasoline, diesel fuels, or aviation fuels; or from components and precursors of such fuels, e.g. FCC naphtha, i.e. naphtha from an FCC, FCC light cycle oil, or coker distillate.

ADVANTAGE - The inventive process achieves sulfur reduction in gasoline and diesel fuels or their components and precursors without relying on hydrotreating processes that employ costly transition-metal hydrodesulfurization (HDS) **catalysts**. It minimizes or eliminates various known disadvantages of conventional and proposed desulfurization processes for producing low-sulfur gasoline and diesel fuels, including octane number loss, olefin content reduction, and/or yield loss in desulfurized products, hydrogen consumption and its associated costs, the high cost of manufacturing and regenerating HDS **catalysts**, and the disposal costs associated with various environmentally undesirable HDS **catalysts**. It accomplishes sulfur removal at high throughput levels, thus allowing a reduction in the capital investment required to achieve large scale production of low-sulfur gasoline, diesel, and related fuels. Because no active HDS **catalyst** is used, hydrogen addition to minimize coking can be achieved with minimal or no hydrogen consumption so that the hydrogen can be recovered from the desulfurized process effluent and recycled. It further avoids or minimizes saturation of desirable olefins in the hydrocarbon feed even at high temperature reaction conditions and even in the presence of added hydrogen.

DESCRIPTION OF DRAWING(S) - The figure is a schematic view of a preferred desulfurization and regeneration process.

Hydrocarbon feedstock 30

Dwg.1/2

Manual Codes

CPI: H04-A01; H04-B02; H04-F02B; N03-F; N07-F02; N07-L02B

☐ L9 ANSWER 5 OF 21 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN

Accession Number

2002-386865 [42] WPIX Full Text

Title

Zirconia group ceramics for engine components, has specific proportion of monoclinic phase calculated using diffraction line strength of monoclinic system and tetragonal planes, as measured by X-ray diffraction.

Patent Assignee/Corporate Source

(TOKE) TOSHIBA KK

Patent Information

PATENT NO.	KIND	DATE	WEEK	LA	PG	MAIN IPC
JP 2002029840	A	20020129	(200242)*		9	C04B035-48

International Patent Classification

ICM C04B035-48

ICS C04B041-80

Abstract

JP2002029840 A UPAB: 20020704

NOVELTY - Zirconia group containing 70-99.9 vol% of zirconia is produced by normal pressure sintering, hot isotropic pressing, cutting and mirror surface polishing. Proportion of monoclinic **phase** (Vm) in the ceramics is calculated using a specific relationship of diffraction line strengths (Im, It) of monoclinic and tetragonal planes measured using X-ray diffraction and copper K alpha rays, is 4-40 vol%.

DETAILED DESCRIPTION - The zirconia group ceramics comprises 5-15 mol% of magnesia as stabilizer having calcium, titanium and/or oxide of rare earth elements, 0.05-30 vol% of silicon carbide, titanium carbide, molybdenum carbide, tungsten carbide, zirconium carbide, hafnium carbide, magnesium **aluminate**, **zinc oxide** and/or nickel oxide.

The proportion of monoclinic **phase** (Vm) is calculated using the relationship $Vm = 1.311Xm$ divided by $(1 + 0.311Xm)$ multiply 100, where $Xm = (Im(-111) + Im(111))$ divided by $(Im(-111) + Im(111) + It(111))$ where $Im(-111)$ is diffraction line strength of monoclinic (-111) plane, $Im(111)$ is diffraction line strength of monoclinic (111) plane, $It(111)$ is the diffraction line strength of tetragonal (111) plane.

USE - For engine components such as tool components, corrosion resistant component, motor vehicle, aircraft, vessels and gas turbine component.

ADVANTAGE - The zirconia group ceramics has excellent toughness and strength, at room as well as high temperatures since grain growth is inhibited. The ceramics has excellent dimensional stability during high usage. The zirconia group ceramics is inexpensive and has high thermal stability.

DESCRIPTION OF DRAWING(S) - The figure shows the flowchart of the manufacturing process of the zirconia group ceramics. (Drawing includes non-English language text).

Dwg.1/7

Manual Codes

CPI: L02-G01D EPI: S03-E06C

☐ **L9 ANSWER 6 OF 21 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN****Accession Number**2001-079550 [09] WPIX Full Text**Title**

Forming a base structure for fabrication of a microelectronic device involves reacting a vapor-phase composition with a nitrogenous compound in the presence of a substrate.

Author/Inventor

BROWN, D W; REDWING, J M; TISCHLER, M A; VAUDO, R P

Patent Assignee/Corporate Source

(ADTE-N) ADVANCED TECHNOLOGY MATERIALS

Patent Information

PATENT NO.	KIND	DATE	WEEK	LA	PG	MAIN IPC
US 6156581	A	20001205	(200109)*		27	H01L021-205

International Patent Classification

ICM H01L021-205

Abstract

US 6156581 A UPAB: 20030719

NOVELTY - A base structure is formed by reacting a vapor-**phase** (gallium, aluminum, indium) composition with a nitrogenous compound in the presence of a substrate to grow a gallium aluminum indium nitride base layer (104) on the

substrate (102) and to yield a microelectronic device foundation.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a method of fabricating a microelectronic device.

USE - For forming a base structure for fabrication of a microelectronic device structure, e.g. light emitting diodes (100), detectors, filters, transistors, rectification circuitry, or semiconductor lasers (claimed).

ADVANTAGE - The method provides an intermediate layer which modifies the electrical properties of the base structure, and increases or decreases the conductivity of the base structure (claimed). It minimizes cracking and bowing upon cool-down after growth. It also provides high growth, uses low-cost precursors, and minimizes the defects generated at the base layer-device material interface. The substrate material can be chosen so that it can be easily removed in situ or ex situ.

DESCRIPTION OF DRAWING(S) - The figure shows a schematic representation of a gallium nitride/indium gallium nitride light emitting diode structure grown on an insulating substrate.

Light emitting diodes 100

Substrate 102

Gallium aluminum indium nitride base layer 104

Intermediate layer 108

Dwg. 3/23

Manual Codes

EPI: U11-C01J3A; U11-C01J8B; U12-A01A2; U12-A01B2; V08-A04A

☐ L9 ANSWER 7 OF 21 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN

Accession Number

2000-521523 [47] WPIX Full Text

Title

Zeolite catalyst for use in gasoline modification during petroleum refining comprises specific amount of zinc oxide which coexist with zinc aluminate before using the catalyst and the catalyst is steam treated.

Patent Assignee/Corporate Source

(SANY-N) SANYO SEKIYU KAGAKU KK

Patent Information

PATENT NO.	KIND	DATE	WEEK	LA	PG	MAIN IPC
JP 2000210567	A	20000802	(200047)*		14	B01J029-40

International Patent Classification

ICM B01J029-40

ICS C10G011-05; C10G035-085; C10G035-095; C10G045-10; C10G045-12

Abstract

JP2000210567 A UPAB: 20000925

NOVELTY - 0.5-20 weight% (weight%) of **zinc oxide** and 3-50 weight% of **zinc aluminate** coexist in a **catalyst** before usage of the **catalyst**. The **catalyst** is steam treated and used for modification of olefinic sulfur containing gasoline stably.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for modification of gasoline which involves filling the steam treated **catalyst** into a fixed **catalyst** bed. Then, supplying olefinic sulfur containing gasoline into the **catalyst** bed at the reaction temperature of 350-550 deg. C and pressure of 0-50 kg/cm²G and weight time space velocity (WHSV) of 2-10 hr⁻¹.

USE - Used in gasoline modification during petroleum refining.

ADVANTAGE - A temporary reduction of the activity of **catalyst** by carbonaceous accumulation on its surface during reaction is restrained. Even when the reaction and regeneration are repeated for longer period of time, permanent activity deterioration of the **catalyst** which occurs gradually is

restrained. The **catalyst** excels in coking-resistant property and permanent-resistant deterioration property. Dwg.0/1

Manual Codes

CPI: H04-D; H04-F02D; H06-B01

☐ **L9 ANSWER 8 OF 21 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN****Accession Number**

2001-094395 [11] WPIX Full Text

Title

Process for the manufacture of fatty acid esters from ricin oil and mono-alcohols uses a heterogeneous catalyst based on zinc and aluminum with a spinel structure in a transesterification reaction and separation.

Author/Inventor

HILLION, G; ROUXEL, J J

Patent Assignee/Corporate Source

(INSF) INST FRANCAIS DU PETROLE

Patent Information

PATENT NO.	KIND	DATE	WEEK	LA	PG	MAIN IPC
FR.2794768	A1	20001215	(200111)*		18	C11C003-10

International Patent Classification

ICM C11C003-10

ICS B01J023-06; C07C031-22

B01J021:04, B01J023-06

Abstract

FR 2794768 A UPAB: 20010224

NOVELTY - The use of the zinc/aluminum oxide **catalyst** enables the production of pure esters and glycerin by a process which involves few stages and results in products of high purity.

DETAILED DESCRIPTION - Process for the manufacture of a fatty acid ester and glycerin to a high state of purity by the reaction of a ricin oil with a 1 - 18C aliphatic mono-alcohol .The reaction is effected in the presence of a **catalyst** chosen from **zinc oxide** , a mixture of **zinc oxide** and alumina or a **zinc aluminate** consistent with the formula : $ZnAl_2O_4$, $xZnO$, yAl_2O_3 ($x, y = 0 - 2$).

INDEPENDENT CLAIMS are also included for the ester compositions obtained and the glycerin.

USE - Methyl esters obtained can be used as fuels and the ethyl, isopropyl and butyl esters have possible uses as lubricants.

ADVANTAGE - The ricin oil has a very specific composition and contains about 90% of 12-hydroxy-9-octadecenoic acid. The **catalyst** used in the invention inhibits the dehydration of the acid to the conjugated diene, 9,11, compound. The reaction produces a secondary product, glycerin, which is obtained in a pure form. Dwg.0/0

Manual Codes

CPI: D10-A01; E10-G02D; E10-G02E; H07-A; N01-C; N03-F

☐ **L9 ANSWER 9 OF 21 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN****Accession Number**

1998-363302 [31] WPIX Full Text

Title

High silica content zeolite-based catalyst - for use in preparation of aromatic hydrocarbon from olefin and/or paraffin feedstock exhibits specific properties.

Author/Inventor

KAWASE, M; KINOSHITA, J; NAGAMORI, Y; NOMURA, K

Patent Assignee/Corporate Source

(SANY-N) SANYO PETROCHEMICAL CO LTD

Patent Information

PATENT NO.	KIND	DATE	WEEK	LA	PG	MAIN IPC
ZA 9706937	A	19980429	(199831)*		80	B01J000-00
NO 9703534	A	19990201	(199914)#			B01J029-04
NO 305308	B1	19990510	(199925)#			B01J029-00
US 6207605	B1	20010327	(200119)#			B01J029-04

International Patent Classification

ICM B01J000-00; B01J029-00; B01J029-04

ICS B01J029-06

Abstract

ZA 9706937 A UPAB: 19980805

A high silica content zeolite-based **catalyst** for use in a reaction with a feedstock containing an aromatic hydrocarbon or which gives a product containing an aromatic hydrocarbon, satisfies the following requirements: (1) the zeolite has silica/alumina molar ratio of 20-200; (2) the zeolite has primary particle diameter of 0.3-3 μ m; (3) when the **catalyst** is converted into H type, the converted **catalyst** has a ratio of the number of surface acid sites to the total number of acid sites of 0.03-0.15; and (4) the **catalyst** exhibits a pyridine-desorbed amount (B) as measured at 500-900 deg. C by a hot desorption method when converted into H type after subjected to steam treatment at a water partial pressure of 0.8 atmosphere and 650 deg. C for 5 hours, and a pyridine-desorbed amount (A) as measured at 500-900 deg. C by a hot desorption method when converted into H type without steam treatment, which satisfy equation: α at most 1.6 (I); and $\alpha = (1/B2 - 1/A2)/5 \times 10^5$ (II). The preparation of an aromatic hydrocarbon from a light hydrocarbon comprising olefin and/or paraffin uses the above **catalyst**.

Preferably the **catalyst** provides a first-order reaction rate constant of n-hexane of not less than 0.2 at 500 deg. C and atmospheric pressure. The **catalyst** comprises a mixture of zeolite and at least one metal from Group VIII, IB, IIB and IIIB. The **catalyst** has a pore volume of not less than 0.2 cc/g and is a mixture of zeolite, zinc component and alumina., and is preferably subjected to heat treatment in steam. The **catalyst** is **zinc aluminate** and **zinc oxide**, preferably 8.2-50 weight% **zinc aluminate** and 1.2-20 weight% **zinc oxide**.

USE - For use in preparation of an aromatic hydrocarbon from olefin and/or paraffin, with products useful e.g. as gasoline components.

ADVANTAGE - **Catalyst** has high regeneration deterioration resistance and coking resistance, with minimised loss of activity. (Reissue of the entry advised in week 9822 based on complete specification).

Dwg.0/8

Manual Codes

CPI: E10-J02B3; H04-D; H04-F02D; J04-E04; N06-B

☐ L9 ANSWER 10 OF 21 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN

Accession Number

1998-147842 [14] WPIX Full Text

Title

Manufacture of ester(s) of linear mono carboxylic acids - includes using animal and vegetable oils and zinc-based catalyst, useful as diesel or domestic fuels, ecological solvents and base compounds for fatty alcohol sulphonate(s), amide(s) etc..

Author/Inventor

HILLION, G; LEPORQ, S; ROUXEL, J; STERN, R

Patent Assignee/Corporate Source

(INSF) INST FRANCAIS DU PETROLE

Patent Information

PATENT NO.	KIND	DATE	WEEK	LA	PG	MAIN IPC
FR 2752242	A1	19980213	(199814)*		33	C11C003-10
US 5908946	A	19990601	(199929)			C07C051-00
IT 1293520	B	19990301	(200147)			C08F000-00

International Patent Classification

ICM C07C051-00; C08F000-00; C11C003-10

ICS B01J023-06; C07C031-22; C10G000-00; C10L001-02

B01J021:04, B01J023-06

Abstract

FR 2752242 A UPAB: 19980406

A new process for the manufacture of a fatty acid ester and glycerin of high purity, which comprises the reaction of a vegetable or animal oil with a 1 - 18C aliphatic mono-alcohol in the presence of **ZnO** or a mixture of Zn and Al oxides and **zinc aluminate**, of formula $ZnAl_2O_4$, $xZnO$, yAl_2O_3 , where -x and y are 0 - 2.

Also claimed, is an ester fuel obtainable with satisfactory characteristics, and pure glycerin.

USE - The esters obtained have numerous applications including diesel and domestic fuels, ecological solvents, base compounds for the preparation of fatty alcohol sulphonates, ester dimers etc., and the production of pure glycerin.

ADVANTAGES - The process is operable in 1 - 3 stages giving esters which meet a required specification for use as fuels (absence of di- and tri-glycerides and low amounts of monoglyceride and sterol esters), and glycerin which is colourless and odourless. The operation may be continuous or discontinuous. Transesterification may be effected with alcohols higher than MeOH, to form ethylic, isopropyl or butylic esters which have lower flow points and are more useful as fuels. Dwg.0/0

Manual Codes

CPI: D10-A; E10-G02E; H06-B04; N01-C; N03-F

☐ L9 ANSWER 11 OF 21 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN

Accession Number

1997-424304 [39] WPIX Full Text

Title

Cyclopentadiene separation from dicyclopentadiene - by contacting with solid sorbent composition comprising alkali metal oxide(s) and/or alkali metal hydroxide and inorganic support material.

Author/Inventor

CHEUNG, T P; JOHNSON, M M

Patent Assignee/Corporate Source

(PHIP) PHILLIPS PETROLEUM CO

Patent Information

PATENT NO.	KIND	DATE	WEEK	LA	PG	MAIN IPC
US 5659107	A	19970819	(199739)*		4	C07C007-00

Application Details

US 5659107 A US 1996-646433 19960507

Priority Application Information

US 1996-646433	19960507
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International Patent Classification

ICM C07C007-00

ICS C07C007-12

Abstract

US 5659107 A UPAB: 19970926

Separating cyclopentadiene from dicyclopentadiene comprises contacting a fluid hydrocarbon-containing feed with a solid **sorbent** composition comprising: (i) at least one alkaline compound selected from alkali metal oxides and alkali metal hydroxides; and (ii) an inorganic support material at effective separation conditions to obtain a liquid hydrocarbon-containing product in which the concentration of the cyclopentadiene is lower than in the feed. The inorganic support material is selected from alumina, silica, silica-alumina, aluminium phosphate, clays, zeolite, titania, hafnia, zirconia, oxides of Group IIA metals, carbonates of Group IIA metals, oxides of Group IIIB metals, magnesium aluminate, calcium **aluminate**, **zinc oxide**, **zinc aluminate**, **zinc titanate** and/or iron oxide.

USE - Used for separating cyclopentadiene from dicyclopentadiene used e.g. in preparation of polyesters.

ADVANTAGE - The process effectively separates cyclopentadiene impurities from dicyclopentadiene to a purity for further use. Dwg.0/0

Manual Codes

CPI: A01-C05; E09-D02; E10-J02A1; E10-J02A2; E11-Q01; E11-Q02; E33-A03; E33-A04; H02-B; J01-E02B

☐ L9 ANSWER 12 OF 21 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN

Accession Number

1996-353775 [35] WPIX Full Text

Title

Removal of sulphur cpds. from hot gas stream - by injecting regeneratable sorbent formed of zinc vapour source especially zinc oxide cpd. with downstream removal of reacted sorbent particles.

Author/Inventor

FLYTZANI-STEPHANOPOULOS, M

Patent Assignee/Corporate Source

(MASI) MASSACHUSETTS INST TECHNOLOGY

Patent Information

PATENT NO.	KIND	DATE	WEEK	LA	PG	MAIN IPC
US 5538703	A	19960723	(199635)*		9	B01D053-52

International Patent Classification

ICM B01D053-52

ICS B01D053-48

Abstract

US 5538703 A UPAB: 19960905

Attrition-tolerant process for removal of S cpds. from a hot gas stream containing H₂S and/or organic S cpds. comprises: removing ash at a location in the gas duct; adding t a downstream location a regenerable **sorbent** formed of a Zn vapour source so that the S cpds. are reacted in the reducing environment of the gas stream; recovering the resulting reacted **sorbent** particles to leave a cleaned gas stream; and regenerating the **sorbent**. The S cpds. are H₂S, COS, CS₂ and/or methyl mercaptans. The Zn vapour precursor is a **ZnO** material, especially **ZnO**, Zn titanate, Zn ferrite, MnZn ferrite, Zn **aluminate**, Zn silicate or CuZn oxide. Other Zn cpds. may also be used.

USE - Especially in coal gasifier outlet clean-up. (claimed)

ADVANTAGE - Method is low-attrition and can accommodate a wide range of gas inlet temps. e.g. 350-1000deg.C. The equipment is compact and simple.

Dwg.1/2

Manual Codes

CPI: E10-E03; E11-Q02; E31-F01B; E31-N05B; E31-N05D; E31-P05A; E35-A; E35-C;
E35-K04; E35-S; E35-U02; H09-H02; J01-E02B

☐ L9 ANSWER 13 OF 21 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN

Accession Number

1993-205411 [25] WPIX Full Text

Title

Dehydrogenation of alkane(s) in presence of improved catalyst - comprising zinc aluminate prepared by calcining zinc oxide and hydrated alumina, tin oxide and platinum.

Author/Inventor

BRINKMEYER, F M; KHARE, G P; KUBICEK, D H; SAVAGE, K B

Patent Assignee/Corporate Source

(PHIP) PHILLIPS PETROLEUM CO

Patent Information

PATENT NO.	KIND	DATE	WEEK	LA	PG	MAIN IPC
US 5220091	A	19930615	(199325)*		7	C07C005-333

International Patent Classification

ICM C07C005-333; C07C011-02

ICS B01J021-04; B01J023-42; B01J023-60; B01J023-62; B01J037-02;

B01J037-08; C07B035-04

C07B061-00

Abstract

US 5220091 A UPAB: 19931118

Dehydrogenating at least one 2-8C alkane to at least one alkene is effected in the presence of steam and a **catalyst** compsn. consisting of 80-98 weight% zinc aluminate, 0.1-5 weight% of at least one tin oxide, 0.005-5 weight% platinum and opt. calcium aluminate. The **zinc aluminate** is prepared by calcining hydrated alumina and **zinc oxide**.

The alkane is pref. propane, n-butane, n-pentane and 2-methylbutane, especially isobutane. Dehydrogenation is pref. carried out at 500-650 deg.C at a molar ratio of steam:alkane of 0.5:1-30:1. The process pref. comprises the additional step of interrupting the alkane flow, regenerating the **catalyst** by heating it with a free oxygen-containing gas at 450-750 deg.C for 0.1-5 hrs., and reusing the regenerated **catalyst** for alkane dehydrogenation. The tin oxide is pref. tin dioxide. The hydrated alumina is pref. selected from boehmite, pseudoboehmite and bayerite, most pref. boehmite. The hydrated alumina and zinc oxide are pref. calcined at 750-1200 deg.C. Tin oxide and calcium aluminate are pref. added to the hydrated alumina and zinc oxide prior to calcining. The calcined mixture is then pref. impregnated with at least one dissolved platinum cpd. followed by drying, calcining, washing with water, drying and calcining.

USE/ADVANTAGE - The invention provides a process for dehydrogenating gaseous alkanes in the presence of an improved **catalyst**. The novel process alleviates coke formation during dehydrogenation. Dwg.0/3

Manual Codes

CPI: A01-D13; E10-J02C3; H04-E03; H04-F02E; N02-F02; N03-F; N03-G

☐ L9 ANSWER 14 OF 21 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN

Accession Number

1992-104791 [13] WPIX Full Text

Title

Benzene conversion to toluene - by contact with supported nickel catalyst in presence of free hydrogen but no methane at relatively low pressures.

Author/Inventor

JOHNSON, M M; PENNELLA, F; PENELLAF

Patent Assignee/Corporate Source

(PHIP) PHILLIPS PETROLEUM CO

Patent Information

PATENT NO.	KIND	DATE	WEEK	LA	PG	MAIN IPC
US 5095160	A	19920310	(199213)*		4	

International Patent Classification

C07C002-24; C07C006-00

Abstract

US 5095160 A UPAB: 19931113

Conversion is effected by (a) contacting a feed mixture comprising benzene and free H and containing essentially no methane with a **catalyst** consisting of (i) Ni metals, and (ii) an inorganic support material selected from alumina, aluminium phosphate, silica, titania, zirconia, hafnia, **ZnO**, **zinc aluminate**, aluminates and titanates of alkaline earth metals and zinc titanate and mixts. of these, at 260-371 deg. C and 0-500 psig to obtain a toluene-containing reaction prod.; and (b) recovering toluene from the prod. from (a).

USE/ADVANTAGE - The toluene produced can be used in any suitable application such as a petrol additive. No methylation agent is required. The reaction conditions are more commercially feasible than in prior art reactions of this type in partic. lower pressures are used Dwg.0/0

Manual Codes

CPI: E10-J02B3; H06-D; N02-C01

☐ L9 ANSWER 15 OF 21 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN

Accession Number

1989-294945 [41] WPIX Full Text

Title

Production of mixture of methanol and higher alcohol(s) from synthesis gas - on catalyst with solid support of zinc oxide or zinc aluminate carrying nickel and molybdenum and opt. other metals.

Author/Inventor

BARRAULT, J; CHAUMETTE, P; COUTRY, P; GHAZI, M; PROBST, L

Patent Assignee/Corporate Source

(INSF) INST FRANCAIS DU PETROLE

Patent Information

PATENT NO.	KIND	DATE	WEEK	LA	PG	MAIN IPC
FR 2627484	A	19890825	(198941)*		20	

International Patent Classification

B01J023-88; B01J032-00; B01J037-02; C07C027-06

Abstract

FR 2627484 A UPAB: 19930923

A mixture of methanol and higher alcohols is prepared by contacting synthesis gas with a S-free **catalyst** prepared by (A) impregnating a support with a Ni cpd., a Mo cpd., and opt. a cpd. of Li, Na, K, Rb, Cs and/or Be (I), where the metals are introduced together or separately as soln(s), and the support is a solid Zn cpd., with specific surface at least 10 square m/g comprising **ZnO**, a stoichiometric **Zn aluminate** (ZnAl_2O_4), A **Zn aluminate** with a stoichiometric excess of Zn ($\text{ZnAl}_2\text{O}_4 \cdot n\text{ZnO}$, where $n = 0.01-10$), or a mixed **Zn aluminate** of formula $\text{Zn}_{1-x}\text{M}_x\text{Al}_2\text{O}_4$ or $\text{ZnAl}_2\text{O}_4 \cdot (n-y) \text{ZnO} \cdot \text{MO}_y$, (B) drying, and (C) heat-activating. $x = 0.01-0.5$; $y = 0.01-5$; M = Mg, Zr, Ca, Sr, Ba, Co or Cu.

USE - The alcohols are used in petrochemistry (production of olefins, ethers, aldehydes, acids) or pure chemistry (production of esters), but the

main appln. is in fuels, utilising the good octane properties. 0/0

Manual Codes

CPI: H06-D04; N01-B; N02-C01; N03-D

☐ **L9 ANSWER 16 OF 21 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN****Accession Number**

1986-048085 [07] WPIX Full Text

Title

Catalytic reforming process for gasoline range feedstock - using zinc oxide-titanate and spinel structure alumina with insufficient zinc to form bulk zinc aluminate.

Author/Inventor

ALDAG, A W

Patent Assignee/Corporate Source

(PHIP) PHILLIPS PETROLEUM CO

Patent Information

PATENT NO.	KIND	DATE	WEEK	LA	PG	MAIN IPC
US 4566967	A	19860128	(198607)*		6	

International Patent Classification

C10G035-06

Abstract

US 4566967 A UPAB: 19930922

The catalytic reforming of a feedstock which contains at least one reformable organic cpd. comprises contacting the feedstock under suitable reforming conditions with a **catalyst** composition consisting of ether of zinc oxide and a spinel structure alumina or a physical mixture of zinc titanate and a spinel structure alumina in the presence of sufficient added hydrogen to prevent the formation of coke, wherein insufficient zinc is present in the **catalyst** composition for the formation of a bulk zinc aluminate.

ADVANTAGE - The use of this **catalyst** composition in a reforming process results in a reduced expense due to reduced use of precious metals-containing **catalyst** and also results in improvements with respect to other **catalyst** containing zinc oxide or zinc titanate.

Manual Codes

CPI: H04-C02; H04-F02C; N01-C02; N03-B; N03-F

☐ **L9 ANSWER 17 OF 21 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN****Accession Number**

1983-14818K [06] WPIX Full Text

Title

Zinc aluminate preparation - by wetting alumina hydrate with dilute acid, adding zinc oxide and calcining.

Author/Inventor

WALKER, D W

Patent Assignee/Corporate Source

(PHIP) PHILLIPS PETROLEUM CO

Patent Information

PATENT NO.	KIND	DATE	WEEK	LA	PG	MAIN IPC
US 4370310	A	19830125	(198306)*		3	

International Patent Classification

C01F007-02

Abstract

US 4370310 A UPAB: 19930925

Zn aluminate is made by wetting particulate alumina hydrate with dilute acid to form a paste; mixing with ZnO, and calcining.

Alumina hydrate is pref. the alpha-monohydrate of average particle size 0.1-200 micron; the ZnO pref. has an average particle size 0.1-1000 micron; and pref. acids are nitric, formic, acetic, propionic and butyric.

Used as a **catalyst** or **catalyst** support. Prod. has about twice the crush strength of the prior art prod. obtd. by mixing alumina hydrate and ZnO and then wetting with acid.

Manual Codes

CPI: E35-C; J04-E03; J04-E04; N01-C; N03-F

☐ **L9 ANSWER 18 OF 21 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN****Accession Number**

1981-30783D [17] WPIX Full Text

Title

Dehydration of alcohol to olefin over zinc aluminate - activated by calcining before use.

Author/Inventor

SHIOYAMA, T K

Patent Assignee/Corporate Source

(PHIP) PHILLIPS PETROLEUM CO

Patent Information

PATENT NO.	KIND	DATE	WEEK	LA	PG	MAIN IPC
US 4260845	A	19810407	(198117)*			

Priority Application Information

US 1980-113948	19800121
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International Patent Classification

C07C001-00

Abstract

US 4260845 A UPAB: 19930915

A saturated alcohol (I) is dehydrated to an olefin (II) over a **zinc aluminate catalyst** of ZnO:Al₂O₃ mole ratio about 1, which has been heated in air to make it catalytically active. The **catalyst** is made by mixing ZnO and Al₂O₃ at mole ratio 1:0.95-1:1, then calcining before use at 700-1400 (800-1200) deg.C for 0.1-30 (1-20) hr. Dehydration is at 200-600 (250-450) deg.C.

Pref. (I) have 2-25C, especially they have 5-25C and are of formula HOCH₂.CHR'R" (R' and R" are 1-20C alkyl, or together form a mono- or bi-cyclic system with at least 4C in a ring bearing an alcohol gp.).

These **catalysts** provide a high selectivity and are less effected by temperature variations than alumina alone.

Manual Codes

CPI: A01-D13; E10-J02C3; E35-C; N01-C01; N03-F

☐ **L9 ANSWER 19 OF 21 JAPIO (C) 2004 JPO on STN****Accession Number**

2000-210567 JAPIO Full Text

Title

CATALYST FOR REFORMING GASOLINE AND USAGE THEREOF

Author/Inventor

KAWASE MASATSUGU; NAGAMORI YUKITO

Patent Assignee/Corporate Source

SANYO SEKIYU KAGAKU KK

Patent Information

JP 2000210567 A 20000802 Heisei

International Patent Classification

ICM B01J029-40

ICS C10G011-05; C10G035-085; C10G035-095; C10G045-10; C10G045-12

Abstract

PROBLEM TO BE SOLVED: To provide a zeolite **catalyst** in which zeolite coexists with **zinc oxide** and **zinc aluminate** which stably reforms gasoline containing an olefinic sulfur through eliminating causes for the deterioration and the like of the **catalyst** such as caulking by using the **catalyst** treated by steam prior to the use in chemical reaction. SOLUTION: This **catalyst** for reforming gasoline is a zeolite **catalyst** used in the process to stably reform gasoline containing an olefinic sulfur. At the point of time before the use of the **catalyst**, 0.5-20 weight% **zinc oxide** is allowed to coexist with 3-50 weight% **zinc aluminate**. In addition, the gasoline containing an olefinic sulfur is supplied to a catalytic bed filled with the steam-treated zeolite **catalyst** under conditions such as 350-550°C reaction temperature, 2-10 hrl weight time space velocity(WHSV) and 0-50 kg/cm².G pressure. In this case, the mol ratio of SiO₂/Al₂O₃ of the zeolite is preferably 20 or more as the mol ratio of SiO₂/Al₂O₃ of the zeolite skeleton before steam treatment. COPYRIGHT: (C) 2000, JPO

☐ L9 ANSWER 21 OF 21 PATOSEP COPYRIGHT 2004 WILA on STN

Accession Number

1993:1008194	PATOSEP	ED	19930919	EW	199335	FS	OS	Full Text
1993:1008194	PATOSEP	UP	19970209	EW	199704	FS	PS	Full Text
1993:1008194	PATOSEP	UPLS	19980710	EW	199803	FS	RS	Full Text

Title

Alkane dehydrogenation.
Alkane dehydrogenation.

Author/Inventor

Brinkmeyer, Francis Maurice, 2124 Skyline Drive, Bartlesville, OK 74006, US;
Savage, Kelly Berkes, 2116 Mountain Drive, Bartlesville, OK 74003, US; Khare, Gyanesh P., 1201 Saddle Lane, Bartlesville, OK 74006, US; Kubicek, Donald Hubert, 2902 Georgetown Court, Bartlesville, OK 74006, US

Patent Assignee/Corporate Source

PHILLIPS PETROLEUM COMPANY, 5th and Keeler, Bartlesville Oklahoma 74004, US PAN 201539

Patent Information

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 557982	A2	19930901		

Priority Application Information

US 1992-842298	19920226
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International Patent Classification

ICM C07C005-333

ICS B01J023-62

ICM C07C005-333

ICS B01J023-62

Abstract

A process for dehydrogenating C(IND=2)-C(IND=8) alkanes in the presence of steam and a **catalyst** composition containing zinc aluminate, a tin oxide and platinum, wherein the **zinc aluminate** support material has been prepared by calcining **zinc oxide** and a hydrated alumina (so as to alleviate coking during the dehydrogenation process).